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MAR 27 1939

Industrial Standardization

and Commercial Standards Monthly

Standards in Industrial Preparedness

(Page 52)

March
1939

"American Standard safety codes have contributed in no small measure to the progress that has been made in our accident prevention program."—*John Stilwell, vice-president, Consolidated Edison Company of New York.*

"The mechanical standards included in the program of the American Standards Association are the core of industry's mass-production processes."—*Alfred Iddles, United Engineers and Constructors.*

IN mechanical, electrical, mining, building, and other fields, industry has turned more and more to standardization. This has saved money. It has also increased efficiency. Through standardization one company did away with four of its five departmental tool rooms. An operating utility eliminated 48% of the wiring supplies kept in stock, and made comparable reductions in the variety of other materials and replacement parts used by its engineers.

Another company redesigned its machinery so that only standard parts need be used. These were cheaper to buy and quicker to replace. An aircraft corporation was able to reduce the price of a new model transport plane by $18,000 through standardization of parts and accessories and of plant practice. A school standardized the "tablet armchairs" used in its classrooms with a resultant saving of $9 on the cost of each new desk. Many companies have effected similar economies through standardization of their office equipment and supplies.

A big utility cut its accident costs from 96 cents per $100 payroll to 26 cents through the development and use of safety standards. Standardization of product and plant practice has helped many a manufacturer to stabilize employment in his factory.

The American Standards Association plays an important part in all this. It keeps in close touch with its 2,000 company members, stimulating and encouraging the company programs. It keeps members advised of the phases of standardization work on a national scale that may be of interest to them. It helps in the organization of standards departments. Through its Company Member Forum, through the pages of its magazine, through its Library Reference Department, the Association is helping companies all over the United States in all phases of their operations in which standardization plays a part.

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RUTH E. MASON, *Editor*

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ASA

Standardization is dynamic, not static. It means not to stand still, but to move forward together.

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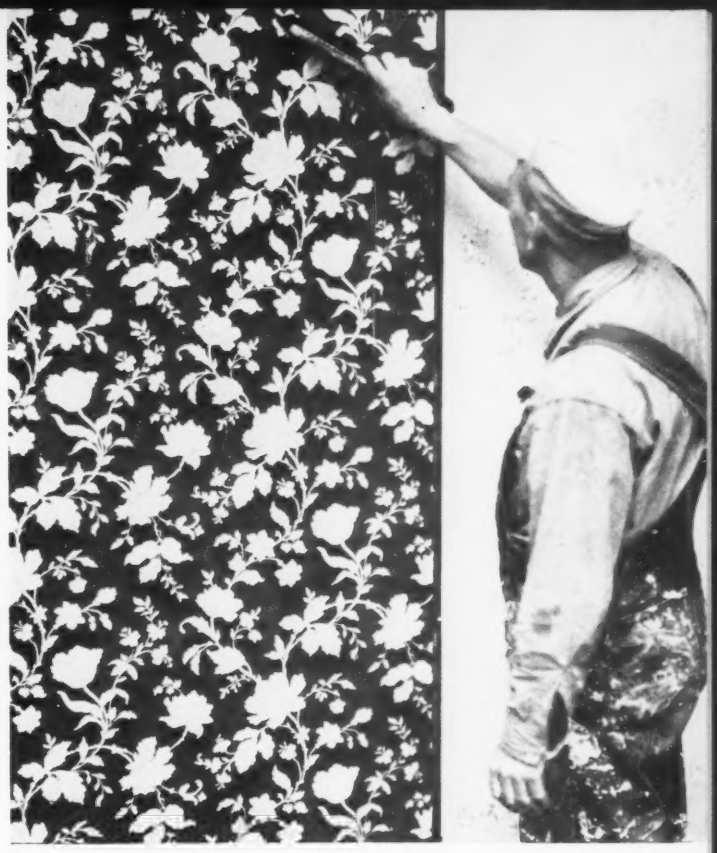
MARCH, 1939

by

H. E. Conrad

Executive Director, National Wall Paper Wholesalers' Association



To qualify for the Guild's Seal, wall paper patterns must match. During the printing samples are taken from the presses and pasted on the wall, as shown here, to check on the alignment of the design

Courtesy National Wall Paper Wholesalers' Assn.

Wall Paper Standard and Seal Guide Users in Choosing Quality

WHEN a joint conference of representative manufacturers, distributors, users of wall paper, and others interested adopted the Commercial Standard for Wall Paper, CS 16-29[1] on May 25, 1929, it was a bold and forward-looking step. Since 1929, however, there have been many improvements in manufacture and although Commercial Standard CS 16-29 is still basically correct, it does not designate the highest type of the better grade of wall paper available today.

Wall paper is a highly styled product, and the average consumer has absolutely no means of distinguishing the quality of one wall paper from another. A certain piece of wall paper may appear, from strictly an appearance angle, to be a most desirable piece of goods but because of the weight of the raw stock, or the type of coloring used, it may prove to be entirely unsatisfactory when hung on the walls. Certain manufacturers in the industry have also shown a tendency to produce large quantities of cheap merchandise, which has proved unsatisfactory in use.

Believing that Commercial Standard CS 16-29 no longer covers highest quality wall paper, the distributing interests of the industry have now created a set of standard specifications of their own to provide the consumer with a guide for the purchase of quality wall paper. In carrying out this program, the National Wall Paper Wholesalers' Association has organized what is known as the Wall Paper Guild of America. The Guild has drawn up a license agreement for use between

This Seal appears in sample books on the back of all wall papers meeting specifications of the Wall Paper Guild of America

[1]CS 16-29 was promulgated by the National Bureau of Standards.

itself and individual wholesalers, with a sub-license agreement to include the retailer. This agreement permits the use of the Guild's seal of certification on any wall paper which meets the requirements of the standard specifications outlined in the contract.

These specifications, which in many respects are similar to the provisions of the Commercial Standard, require that the Seal shall be attached only to wall paper meeting the following requirements:

(*a*). Whether flat or embossed, must be printed with fast-to-light colors and must stand the standard fade-o-meter test, or its equivalent, for a period of 24 hours.

(*b*). Papers must be cleansible, that is—the surface must resist water so that it may be wiped off with a damp sponge without damaging the color or surface.

(*c*). Papers must meet or exceed the minimum general requirements covered by commercial standard CS 16-29, recommended and promulgated by the U. S. Department of Commerce.

(*d*). 18 inch flats must be printed on not less than 10-ounce stock.

(*e*). 18 inch embossed must be printed on not less than 14-ounce stock.

(*f*). 30 inch papers must be printed on not less than 16-ounce stock.

(*g*). To insure maintenance of the integrity of the Seal as an identification of quality papers, thereby better serving the public, the Seal shall not be placed on any rough plaster or mica ceilings, and shall not be placed on waxed tiles selling below 30 cents per single roll retail or any other papers selling below 25 cents per single roll retail.

A Fadeometer is used to check fastness-to-light. It duplicates the rays of the sun, intensifying them so that 24-hour exposure is equivalent to six-months exposure on the walls under natural sunlight

Courtesy National Wall Paper Wholesalers' Assn.

The chief difference between the Guild specifications and the Commercial Standard is in the inclusion of the provision that papers must be cleansible, and in the inclusion of requirements for the weight of stock. There is some work now going on, however, which may result in including the cleansibility requirement in the Commercial Standard, according to reports from the National Bureau of Standards.

The Guild program has been well received and accepted by large, medium, and small distributors alike. Wholesalers and retailers are showing a great deal of enthusiasm and report favorable consumer reaction.

The 1939 sample books with nationwide distribution are showing a reproduction of the Guild Seal of Certification on the back of all wall papers meeting Guild specifications, and all licensed outlets are using an attractive window sign, in the shape of the Seal, for the identification of their places of business as that of an authorized Guild dealer.

ASTM Publishes Standards On Insulating Materials

All of the 40 specifications and test methods on electrical insulating materials issued by the American Society for Testing Materials are included in its 1938 edition of *Standards on Electrical Insulating Materials*. The book also includes the report of Committee D-9 outlining major phases of its work and giving proposed revisions. Statements concerning the significance of various tests —Dielectric Strength Test, Resistivity Test, Power Factor Test, Impact Test, and Tensile Strength Test.

Copies can be ordered from the American Society for Testing Materials, 260 South Broad Street, Philadelphia, at $2.00 each.

New ASA Committee on Photography Elects L.A. Jones Chairman

A START toward the establishment of national standards for photography was made by a new committee organized by the American Standards Association February 21 when it elected as its chairman Dr. Lloyd A. Jones of the Eastman Kodak Company. The Optical Society of America is taking the leadership in the technical work of the committee.

Better interchangeability of parts and standards for performance of cameras, light meters, film, developing materials, and photographic equipment is expected to result from work of this committee.

At its meeting February 21 plans were made to set up subcommittees which will cover physical dimensions of sensitive materials and holders; characteristics of sensitive materials; the finished photographic product; cameras, lenses, shutters, diaphragms, view finders, sizes and mounts of light filters, and dimensions of safe-lights; artificial illuminants; processing equipment; and projectors and printers.

The work of this committee is expected not only to result in national standards but will also be the basis for American recommendations in connection with international standards for photography. An international committee on photography has already been authorized by the International Standards Association, with the American Standards Association, which holds the secretariat, taking the leadership in its work. The committee is also planning to work closely with the International Congress of Scientific and Applied Photography.

The committee set March 24 as the date of its next meeting.

Organizations represented on the new committee on photography standards are:

Agfa Ansco Corporation
American Chemical Society
American Committee of the International Congress of Photography
American Institute of Graphic Arts
American Optical Company
American Photoengravers Association
American Roentgen Ray Society
American Society of Mechanical Engineers
American Society of Photogrammetry
American Society for Testing Materials
Bausch & Lomb Company
Cambridge Instrument Company
Defender Photo Supply Company, Inc.
DuPont Film Manufacturing Corp.
Eastman Kodak Company
Electrical Testing Laboratories
Fairchild Aerial Camera Corporation
Folmer Graflex Corporation
Gevaert Company of America, Inc.
Graphic Arts Research Bureau
The Haloid Company
Hammer Dry Plate & Film Company
Interchemical Corporation
International Research Corporation
E. Leitz, Incorporated
Lithographic Technical Foundation, Inc.
Master Photo Finishers of America
National Electrical Manufacturers Association
National Photographic Dealers Association
Optical Society of America
The Photo Finishing Institute
The Photographers Association of America
Radiological Society of North America, Inc.
Society of Motion Picture Engineers
U. S. Department of Commerce, Coast Geodetic Survey
U. S. Department of Commerce, National Bureau of Standards
U. S. Navy Department
U. S. War Department, Army Air Corps and Ordnance Department
Carl Zeiss, Incorporated

In order to round out the membership, additional organizations were proposed at the meeting which will be invited to name representatives.

Public Hearings to Determine Standards for Canned Foods

Public hearings will be held April 10 to give industry and consumers an opportunity to present facts to be used as a basis for definitions and standards of identity, quality, and fill of containers for canned peaches, canned apricots, canned pears, and canned cherries under the new Federal Food, Drug, and Cosmetic Act. Similar public hearings to cover canned peas are scheduled for April 17.

Hearings will begin at 10:00 A. M. in the South Ballroom, 10th floor, Raleigh Hotel, 12th and Pennsylvania Avenue, N.W., Washington, D. C.

Those who are unable to attend may submit testimony in affidavit form. Affidavits should be addressed to John McDill Fox, Office of the Solicitor, Department of Agriculture, Washington, D. C.

Proposed definitions and standards are published in the March 7, 1939, issue of the Federal Register, which is available from the Superintendent of Documents, Government Printing Office, Washington, D. C., at 10 cents per copy.

The Role of Standards In Industrial Preparedness

by

Louis Johnson

Assistant Secretary of War

THE rapidly moving events in world affairs within the past year have focused attention on the importance of munitions for national security. In our country, interest in the problems of National Defense has never been more acute since the World War. My office is charged by law with the preparation of plans for the adequate provision of the necessary equipment and supplies required by our land forces in the event that our country is again forced into war.

Study and investigation have made it increasingly evident that the provision of materiel must be synchronized with the mobilization of man power if our armed forces are to be effective. Studies have also shown that maintenance of a full war reserve of materiel would tax the resources of the richest of nations. The solution of the problem then lies in adequate production at the earliest possible date after declaration of hostilities. That is the major problem with which my office is faced.

Four important questions are involved in plans for procurement of materiel in such an emergency, all of which must be satisfactorily answered before our plans may be said to be adequate.

1. ***What items are wanted?*** The answer is the adoption of standard types and completion of the drawings and specifications for them in peace time.

2. ***How many are wanted?*** Answered by computation of requirements, with due regard to the combined needs of the Army and Navy.

3. ***Where can they be obtained?*** The answer is a painstaking survey of industrial facilities, resulting in the allocation of plants suitable for the production of necessary items.

4. ***How can they be obtained in the time and quantity desired?*** Answered by the preparation of a complete production plan for the particular item.

The activities of the American Standards Association are related particularly to the first question —What items are wanted?—and to the fourth question—How can they be obtained in the time and quantity desired?—Standards enter into the design of the article. The basic standards used in manufacturing operations, and the commercial processes of production will affect the answer to the fourth question.

There are some 7300 principal items of equipment and supply for use of our soldiers which must be procured, while the number of components for these complete articles total hundreds of thousands. Many of these items, such as ammunition of all kinds, fighting tanks, and gas masks are not in commercial production in our country. Consequently the exact production methods peculiar to these items are not generally known to industry. Yet industry will, in the event of war, be called upon to produce over 90 per cent of the

"If we are to have equipment adaptable to mass production, and obtainable with the least delay, the basic standards of industry must be applicable to their manufacture.

"I earnestly urge that your activities along all lines of standardization be unflagging because they lend to our country those vital elements of time and material for which we have no suitable substitutes in an emergency."—*Louis Johnson.*

material needs of the Army. Many plants will therefore be called on to manufacture items with which they are not now familiar. Some makers of kitchen pots and pans may be called upon to make airplane parts. Availability of common standards will greatly facilitate their handling of new manufacture. Army standards must conform to commercial standards as closely as the military requirements will permit.

Constant Improvement

The tendency in this modern day of mechanization is ever toward increased complexity in the tools of war. The military airplane, the fighting tank, the radio are constantly being improved to meet new demands made upon them. Need for more fire power, higher speed, and better maneuverability are ever before the designer and production engineers engaged in airplane manufacture. Better armor protection, more cannon, and improved radio communication are essential to the success of the fighting tank.

These are only a few examples, but the field is much wider, touching as it does on almost every field of engineering and production known to this country. Textiles, chemicals, steel and metals of all kinds, machine tools, and gauges for manufacture are only a few of the most important. A few years ago the all-metal airplane did not exist. Today it is a common construction. Mechanization in the field of motorization of the soldier on the ground complicates the supply problem. Performance requirements for some types of motor vehicles exceed those of ordinary commercial use.

Because of the increased complexity of military equipment, the huge quantities required, and the vital necessity for speed in production, the ingenuity of the designer and the production manager will be taxed to the utmost. Materials used in manufacture must be conserved. Use of the basic standards of production, which serve industry so well today, will be highly important for the saving of time and material in an emergency.

Establish Standard Items

The procedure of the War Department for the development and selection of adopted types in peace is quite similar to that used by industry. It is a long process. This year's model of automobile is not designed overnight. Study determines the performance characteristics required, and the designer shows what can be accomplished to meet these requirements. A first model must be built and tested to prove the engineering work in the design. Its qualities as to endurance require prolonged test. In the War Department, similar steps are taken to establish standard items which are suitable to the specific purpose for which the article is to be used. Funds for development and research are limited. Models are not changed every

Designs for Army tanks include commercial products as far as practicable to facilitate rapid production. A design is not acceptable if industry cannot produce it

year, but only as important improvements are developed. However, as far as funds permit, development work is carried on by the technical branches of the War Department, both in their own organizations and in collaboration with commercial organizations to improve present equipment and to develop standards to meet new requirements.

Throughout the design and test of an item, emphasis is placed not only on its suitability for use, but also on the requirement that it be adaptable to quantity production. Thorough engineering and field tests are part of the regular procedure. For example, among the many development programs is that of the slate blue soldier's uniform. Tests of this uniform were recently begun under field conditions to determine its suitability for service use. This color has the advantage that it can be more readily matched in manufacture than the olive drab with which we are so familiar. Another typical case of adapting equipment to commercial processes is the study of seamless steel tubing to determine the practicability of using this product in the manufacture of bombs. They were formerly made by forming pierced billets, or plates into the cylindrical bomb. Welded bombs, made possible by present welding methods, will greatly advance the facility of their procurement.

Careful attention is given all designs with a view to excluding all non-essential features, especially those which would unnecessarily increase cost, require special characteristics when strictly commercial types would suffice, or would delay production and complicate procurement. The items must, insofar as is practicable, be designed to take advantage of commercial standards, particularly dimensional standards for manufacture, and the machines available to industry to produce commercial articles. Steels which can be produced in quantity by standard practice must be depended upon rather than the perfect alloy which can only be obtained in small quantities.

The design of a fighting tank is not acceptable if industry cannot produce it. Therefore our tank designs include commercial products as far as practicable. The engine, transmission, clutch, bearings, carburetors, and even the armor plate are commercial products, made in accordance with standards developed by industry. Containers for hand grenades, the complete round of ammunition for the 75 mm field gun are made of cardboard adapted from the ordinary heavy mailing tube. The high-speeded artillery carriages are provided with commercial standard disc wheels and pneumatic tires. Commercial standards in the art of welding have made possible the elimination of many intricate castings, and much riveting in the construction of artillery carriages. The liquid

Our Front Cover

Seversky P-35 airplanes of the Army Air Corps flying in formation. Official photograph, U. S. Army Air Corps

Industry's standards are used wherever possible, for anti-air craft guns as well as other Army equipment. Emphasis is placed on the need for quantity production

smoke screen sprayed from airplanes is a combination of commercial chemicals.

These steps must be carried out in peace time, and a definite standard item selected for each requirement. A tested standard has been developed and is of record for practically every requirement. As improvements are developed the standard item is changed to include them. Because of advance in design and the art of manufacture, items such as the military airplane change rapidly. Many others are in process of change in order to take advantage of new developments. It may be necessary to accept the 90 per cent efficient item which we can get rather than wait for the 100 per cent efficient article. We cannot wait for the perfect 75 mm gun, or the perfect airplane. We must provide usable equipment which can be guaranteed to be available. The type selected may not be the most efficient, but if M-day should come tomorrow, we should have to go to production on that basis.

Must Use Basic Standards

If we are to have equipment adaptable to mass production, and obtainable with the least delay, the basic standards of industry must be applicable to their manufacture. These are known and are being used in peace-time production. Equipment on hand and present commercial processes are adapted to these standards. Standard gages exist for checking many dimensions in manufacture and inspection. Plans show the desirability of providing sufficient sets of gages for inspection in the quantity production of the important items not normally produced by industry. Over 2000 gages are required for the manufacture of the Garand semi-automatic rifle alone. Gages in similar or larger quantities will be necessary for other items such as artillery cannon and carriages. They are not all provided now, but it is proposed to increase our stocks of gages as appropriated funds will permit.

These gages will be one of the important tools for production control and will assure interchangeable parts. The advantage of interchangeable parts, resulting from use of common standards, not only simplifies the assembly of complicated items of equipment, but also greatly aids in the maintenance of material in the field. Military forces seldom operate near ordinary centers of commercial supply. The necessary stocks of maintenance parts to be carried in the field can be reduced very considerably when standard interchangeable parts are available.

The Army has about 28 different makes and models of passenger cars and 143 makes and models of trucks. These motors are the product of one of the greatest industries of our country, and are available in quantity. Purchases made annually, and the legal requirement that awards be made to the lowest bidder, result in the number of models and makes. The maintenance of this number of vehicles in the theatre of operations distant from ordinary centers of supply is an almost impossible task. The automotive industry has made great strides in standardization of components,

"Business leaders have turned to the machinery of the American Standards Association for a forum in which to work out important mutual problems. The American Standards Association is the only means manufacturers have of developing standards that will be acceptable to both manufacturers and consumers."—*Howard Coonley, president, National Association of Manufacturers; past-president, American Standards Association.*

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and processes of manufacture. The War Department is making close intensive study of the possibilities of reducing the number of types. The problem of supply demands our careful attention to further simplification in this field.

Development in the design and manufacture of equipment for war purposes has in many cases turned into standards adopted by industry. One of the first applications of interchangeable parts was in the shoulder rifle of the infantryman. The army type of face piece for the gas mask is widely used in the chemical industry today. Activated charcoal developed for the gas mask is used in the stripping of natural gasoline from natural gas. The antidim compounds used for prevention of fogged windshields in automobiles are based on the preparation developed to keep the eye piece of the soldier's gas mask clear.

Close contact is maintained with industrial standardization. The War Department is a Member Body of the American Standards Association and is represented on 36 of its technical committees on standardization projects. Among these projects are various activities concerning machine tools and metal working equipment, construction materials, metals, dimensions, tolerances, photographic materials, radio, and many other fields of peculiar interest and application to the tools of war. The Department is also represented on technical organizations which sponsor national standards through the ASA. The economies of time and material which these standards permit will be of the utmost value in a national emergency.

Cooperation Through ASA

It is appreciated that the work of standardization is a matter of cooperation throughout industry, rather than a matter of legal direction.

The activities of the American Standards Association are maintained through funds provided by industry. In peace time the standards established by industry on a national scale promote economy in Army purchases. In the event of war, the value of these standards would be highly important in the saving of time and material.

The wide production field now covered by the membership of the Association indicates the thorough consideration which a standard must have before its adoption for national use.

Active effort is being made by the Army and Navy for standardization in aircraft material through the Aeronautical Board. Much basic work has been done between the two services and with industry. Work has progressed so that common specifications are being prepared for many processes and materials needed in the construction and supply of aircraft.

The War Department maintains close contact with the National Bureau of Standards. Simplified Practice Recommendations and Commercial Standards as agreed upon by industry and published by the Bureau are considered and accepted wherever they can be applied to military equipment.

Federal Specifications prepared under the direction of the Procurement Division of the Treasury Department are commented upon or concurred in by the War Department prior to their promulgation. The War Department is represented on the majority of the 73 technical committees engaged in the preparation of Federal Specifications.

U.S. Army Specifications for items not covered by Federal Specifications are prepared by the agency of the War Department charged with their procurement. They are carefully coordinated with all interested agencies within the Department and with industry, with a view to obtaining working specifications which accord with commercial standards.

Within the past year Congress has appropriated

funds in a limited amount to the War Department for educational orders. These orders are to permit the placing of contracts with selected commercial organizations for the production of war materiel not now in commercial production. They will enable production to be planned in detail by the plant and test of that plan by actual production in small quantity of the item concerned. They will further subject our design to the criticism of the production engineer and should lead to improvement in design so that it will be in better accord with commercial standards and practices.

For the success of our arms, in the event our country is forced into hostilities, the adequate and early supply of materiel is vital. A limited war reserve of materiel is kept on hand which is intended to "cover industry" during that period when tools and other manufacturing equipment are being arranged for war production. That period must occur but it may be shortened by wide adoption of standards of manufacture. I assure you that advantage will be taken of those standards in the design of war materiel to the fullest possible extent, so long as the resulting item meets the performance required.

I earnestly urge that your activities along all lines of standardization be unflagging because they lend to our country those vital elements of time and material for which we have no suitable substitutes in an emergency.

American Industry Will Help Develop International Aeronautic Standards

THE principal aeronautical organizations in this country meeting at the offices of the American Standards Association February 28 decided to take part in the development of international standards in the aeronautical field.

Arthur Nutt, vice-president in charge of engineering of the Wright Aeronautical Corporation, representing the Aeronautical Chamber of Commerce, acted as chairman of the Conference.

Plans for the work, which will be carried out by the International Standards Association, include agreement on sizes and specifications for more commonly used parts of airplanes and airplane engines, and also specifications for fuels.

This decision to take part in aircraft standardization on an international scale was based upon the belief of the Conference that such work will lead to important economies and other advantages to the operator, the manufacturer, and the public. It will enable the airplane operator who has crossed his own border to get the commoner supplies and replacement parts for his plane and to refill his tank with fuel that will not require readjustments of his engine. Thus this work will facilitate commercial air travel.

Worldwide agreement on parts will alleviate the very serious problem which American manufacturers must now face in servicing the engines and aircraft which they sell abroad. They are constantly being pressed by their foreign customers to use interchangeable parts so that, for example, an American engine shaft will fit European propeller buts. International standards, by helping this situation, will widen our export market which is already considerable. (One manufacturer has sold engines in 48 different countries.)

From the point of view of the public this international work will make airplane travel safer by tending to unify the safety regulations of the various countries and providing a common ground for the exchange of experience.

The program being carried on by the International Committee on Aeronautics was considered by the conference and it was agreed that the organizations represented would like to take part in work now going forward on:

- Wheels and tires
- Nominal diameters of tubing and fittings
- Pipe line connections and fittings
- Threads
- Propeller hubs
- Bolts and nuts
- Electric cables
- Beacons
- Symbols—Terms used in aeronautics
- Performance characteristics of airplanes and engines
- Identification colors for electric conduits
- Fuels
- Light metal rivets
- Light metal rolled sections
- Spline couplings

These national organizations have expressed their intention of participating in the work for the development of standards in the field of aeronautics:

- Aeronautical Chamber of Commerce
- Air Transport Association of America
- American Petroleum Institute
- American Society for Testing Materials
- Civil Aeronautics Authority
- Cooperative Fuel Research
- National Advisory Committee on Aeronautics
- Society of Automotive Engineers
- U. S. Army
- U. S. Navy

It was found that some of the work in which the American organizations are interested has been prepared in draft form and these drafts are now up for final action. These include recommendations for controls; apparatus dials; identification colors for pipe lines; table of weights; direction of rotation of engines; designation of engine cylinders; spark plugs; and tank caps.

ASA Gives Industry Voice In International Agreements

International agreement on standards is promoted through the International Standards Association, of which the American Standards Association is a member. Through this membership American industry has an opportunity to present its views on problems brought before the international committees. International agreements when adopted are recommended by the national standardizing bodies for use by industry in each country.

The American Standards Association holds the secretariat for the international committees on nomenclature and methods of test for petroleum products and on photography and is cooperating on 14 other international committees, covering:

Acoustics	Refractory materials
Aeronautics	Rubber products
Ball and roller bearings	Sieves
Cinematography	Steel and iron
Documentation	Textiles
Coal	Tires, rims, and tire valves
Flow measurements	Upholstery materials
Paints	Welding
Preferred numbers	

P. G. Agnew, secretary of the ASA, represents the ASA on the Council of the International Standards Association.

Twenty-one of the 26 national standardizing organizations are now members of the ISA: Argentina, Belgium, Czechoslovakia, Denmark, Finland, France, Germany, Great Britain, Greece, Holland, Hungary, Italy, Japan, Norway, Poland, Rumania, Russia, Spain, Sweden, Switzerland, United States of America.

Meetings of technical committees and of the Council of the ISA will be held this year in Finland, from June 26 to July 8.

For possible new material to be suggested for international standardization, the conference recommended that standards developed by committees of the Society of Automotive Engineers and subjects proposed by the U. S. Army and Navy be studied.

The Conference recommended that the American Standards Association organize a committee of all groups represented at the Conference, to insure effective American participation in the international work. It was agreed that this committee should work under the technical leadership of the Society of Automotive Engineers, which for years has pioneered in the development of industry standards in the airplane field.

This international work will be carried out by the International Standards Association, which is a federation of the national standardizing bodies of 26 countries. The American Standards Association is a member, and through this membership provides the means for American industrial groups to take part in international standardization projects of interest to them. Seventeen such undertakings in the fields of steel and iron, textiles, cinematography, automobile parts, etc. are already actively under way. The technical work of the ISA is carried on by international committees which meet whenever the development of the work so requires.

The meeting February 28 further decided that the American Standards Association should try to arrange for a small international conference on the subject of aircraft standards to take place in New York the week in May just prior to the meeting of the World Automotive Engineering Congress which will be held under the auspices of the Society of Automotive Engineers.

American Institute of Architects Renews Membership in ASA

The American Institute of Architects, which has a close connection with the active work now going forward in the ASA on building code problems, has rejoined the American Standards Association as an Associate Member. It had resigned from membership as a Member-Body in 1932.

The Institute is a member of the Building Code Correlating Committee, general administrative committee in charge of the ASA building code program, and is also represented on 30 of the technical committees working on standards under the procedure of the ASA.

Officers of the Institute are: Charles D. Maginnis, Boston, Mass., president; E. C. Kemper, Washington, D. C., executive secretary; and Theodore I. Coe, technical secretary.

Textile Chemists and Colorists Become ASA Associate Member

INTEREST in the work being done by the American Standards Association on standards for consumer goods brought about a decision on the part of the American Association of Textile Chemists and Colorists during the past month to join the ASA as an Associate Member. The Association is a scientific and technical organization which carries out research and adopts standards on a wide range of problems connected with color and textiles. Some of its work has resulted in standards on how to determine fastness to washing, laundering, and bleaching; fastness to light; crocking or dry rubbing; and shrinkage of textile materials. It has also adopted a number of standard methods of analysis of materials used in the textile industry. Twenty-six subcommittees of the Association's Research Committee are now active in carrying out the research needed for the development of these standards. The Research Committee is under the chairmanship of Louis A. Olney, Professor of Chemistry and Dyeing, Lowell Textile Institute.

The objects of the Association, which are carried out through its 11 local sections and through the activities of its Research Committee, are:

To promote increase of knowledge of the application of dyes and chemicals in the Textile Industry.

To encourage in any practical way research work on chemical processes and materials of importance to the Textile Industry.

To establish for the members channels by which the interchange of professional knowledge among them may be increased.

Some 2,200 individuals working as textile chemists or as chemists concerned with the application of dyestuffs, dyers, bleachers, or finishers, as well as students in technical schools, and associate members interested in the work of the Association are members.

Association Officers

Officers of the American Association of Textile Chemists and Colorists are:

Alban Eavenson, Eavenson & Levering Company, Camden, N. J., *president*
Duncan Ferguson, General Manager, Shelton Looms, Shelton, Conn., *vice-president*
Arthur R. Thompson, Jr., Ciba Co., Inc., Charlotte, N. C., *vice-president*
Harold C. Chapin, Assistant Professor of Chemistry, Lowell Textile Institute, Lowell, Mass., *secretary*
William R. Moorhouse, Resident Manager, National Aniline & Chemical Co., Boston, Mass., *treasurer*
Louis A. Olney, Professor of Chemistry and Dyeing, Lowell Textile Institute, *president emeritus and chairman of the Research Committee*

As an Associate Member of the ASA, the American Association of Textile Chemists and Colorists will be kept in close touch with all the activities of the ASA, will be entitled to receive free copies of INDUSTRIAL STANDARDIZATION, to free use of the ASA library, and to receive one free copy of each new American Standard when it is published. Its representatives may also attend meetings of the ASA Standards Council.

ASA Receives Newly Published Government Specifications

Federal specifications, recently approved by the Director of Procurement for the use of all departments and establishments of the Government, have been received by the American Standards Association. The specifications cover the following subjects:

Aluminum; Bars, Rods, Shapes and Wire QQ-A-411a
Aluminum-Alloy (Aluminum-Copper-Magnesium-Manganese); Bars, Rods, Shapes, and Wire QQ-A-351a
Aluminum-Base-Alloys; Sand-Castings QQ-A-601
Bacon; Smoked PP-B-81a
Base, Metal; (For) Plaster and Stucco Construction QQ-B-101c
Cement; Rubber (Artists' and Photographers' and Cold-Patching) ZZ-C-191a
Cheese; American (Cheddar or American Cheddar) and Process American C-C-271a
Cheese; Swiss (Domestic and Process) C-C-301a
Hand-Saw Sets GGG-H-101a
Hose; Chemical ZZ-H-421a
Irons, Soldering; Electric W-I-681
Marmalade Z-M-106
Paper; Lens, Tissue UU-P-313
Socks; Cotton JJ-S-566a
Socks; Wool and Wool-Cotton Mixture JJ-S-581a
Tapioca N-T-101a
Twine; Flax T-T-891

The above Specifications may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., at five cents each.

No cure is effective, once silica enters lungs, experts find . . . .

International Conference Recommends Dust Control as Silicosis Solution

by

Dr. R. R. Sayers

Senior Surgeon, National Institute of Health; Chief, Division of Industrial Hygiene, U. S. Public Health Service; vice-chairman, Subcommittee on Pneumoconiosis of the Correspondence Committee on Industrial Hygiene, International Labour Office

A COMMITTEE of experts on silicosis, from nine countries, met last fall under the auspices of the International Labour Office at Geneva to pool their knowledge of the cause, prevention, and cure of silicosis. No therapeutic measures have yet been found for the treatment of silicosis or for eliminating silica from the lungs, and emphasis must be placed on prevention through suppression of silica dust, through early diagnosis, and through preventing individuals with pulmonary tuberculosis from entering industries in which silica dust is to be found, the committee agreed.

The twelve experts who attended the meeting are members of the Subcommittee on Pneumoconiosis of the Correspondence Committee on Industrial Hygiene of the International Labour Office. They met at Geneva from August 29, 1938, to September 9, 1938, inclusive, with three representatives from the Governing Body of the ILO and six observers from five countries.

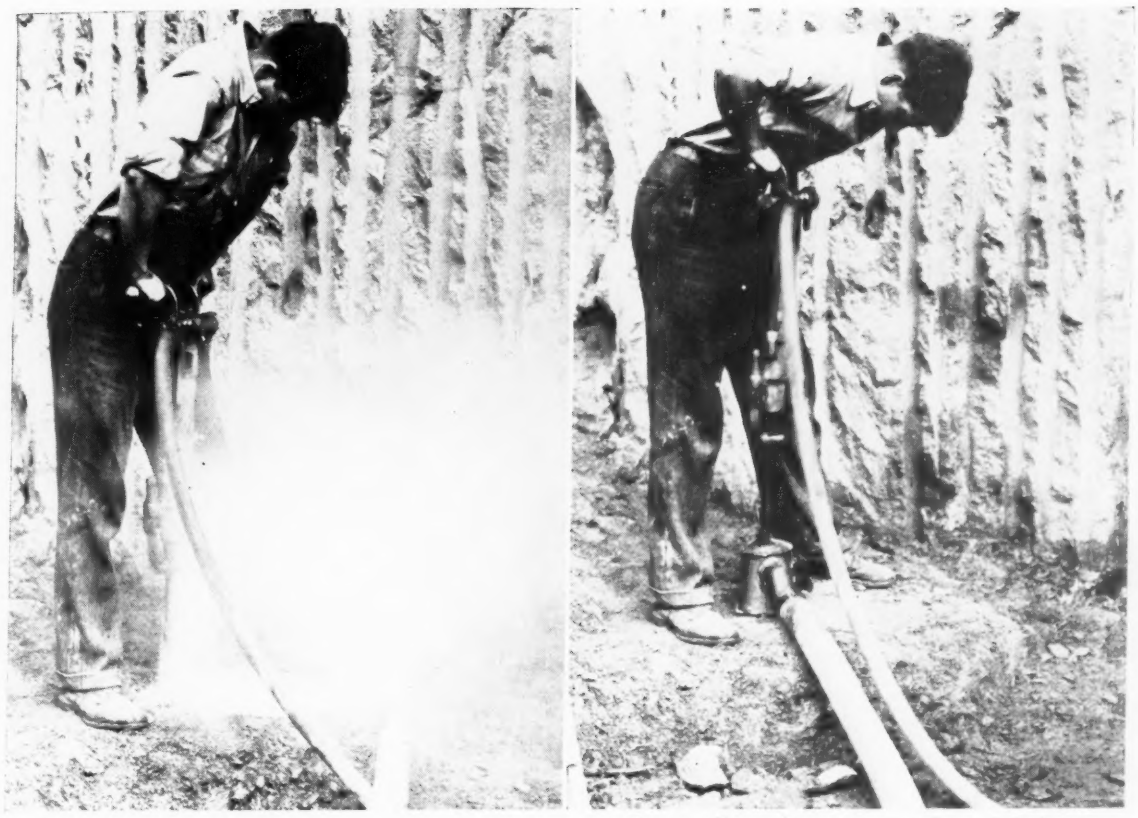
At the meeting Dr. A. J. Orenstein of South Africa was selected chairman of the committee; Dr. A. Langelez of Belgium and Dr. R. R. Sayers of the United States, vice-chairmen; and Dr. Middleton of England, Recorder.

The work of the committee is limited to silicosis, defined as a disease produced by free silica, pure silica, and silica, all of which terms are used to designate uncombined silicon dioxide. Experimental work since 1930, the date of the last meeting of the committee, shows that dust other than silica dust does not seem to be capable of producing the lesions of silicosis, unless free silica is present. In cases where silica dust is present with other dust, the other modifies the disease, the committee was told. Silicosis, for instance, occurs among miners in coal mines if the dust to which they are exposed contains free silica. Coal dust alone does not, either in animals or men, produce lesions similar to those of silicosis. There are many industries where pulmonary disease due to inhalation of dust is produced, but the disease is always associated with the inhalation of silica dust, with or without a mixture of other dusts.

The committee, therefore, re-affirmed the decision of the 1930 conference as to the nature of silicosis, that "silicosis is a pathological condition of the lungs due to inhalation of silicon dioxide. It can be produced experimentally in animals."

The early diagnosis of silicosis should be based upon employment (occupational) histories, including the history of exposure to silica dust; a complete clinical examination; and a technically satisfactory X-ray examination. For satisfactory diagnosis of early silicosis it is essential that the examination be made by thoroughly trained and competent medical personnel, equipped with satisfactory apparatus, and these examinations should preferably be centralized, the committee agreed. The first functional symptom to appear is dyspnoea on exertion, and radiologically there are small discreet circumscribed shadows tending to uniformity in size and density, of bilateral distribution and accompanied by increased striation, it was pointed out.

A number of the members of the committee emphasized the untoward effects that may follow compulsory removal of cases of simple silicosis



Courtesy Metropolitan Life Ins. Co. and Kadco Corp.

Dust, controlled and uncontrolled. Left, drilling without a dust trap. Right, with a dust trap

from their work. Dust concentrations should, therefore, be controlled so that the working conditions will not produce the disease, they agreed.

In preventing silicosis, the value of initial examinations was emphasized by the committee. Such examinations should be based on the idea that individuals with active pulmonary tuberculosis should be prevented from entering those industries in which they might inhale silica dust. For personal protection of workers, the use of masks was considered, but it was decided that while masks are recognized as being useful under certain circumstances, and while great improvements are being made in them, they should be used only when other methods of control of the dust are not applicable. Suppression of the dust should be carried out whenever possible, the committee recommended. It emphasized its recommendation by urging that means and measures best applicable to the particular process should be taken to insure that the atmosphere to which the workers are exposed is free from harmful concentrations of silica dust.

Effects of concentration, composition and size-frequency distribution of dust were discussed. It was agreed that intensity of exposure is a function of both dust concentration and time, that the most satisfactory knowledge at present available on the problem of silicosis refers to the effects of silica, and that much work still remains to be done on the effects of other dusts mixed with silica. Methods of determining the concentration and the percentage of free silica also need further investigation, as does the method of determining free silica as such.

Valuable contributions have been and can be made from many professions, such as chemists, engineers, geologists, physicians, physicists, and others, it was pointed out. The problem of silicosis is essentially a medical one, however, the committee agreed, and coordination of these contributions should be in the hands of competent medical authorities.

The committee stated that it does not know of any specific therapeutic measures for the treatment of silicosis, nor of any method of elimination of the silica from the lungs.

The problem of assessing the percentage of disability in a silicosis victim was also considered. This percentage, which determines the amount of

Nine Countries Represented At International Conference

Twelve representatives from nine countries, members of the Subcommittee on Pneumoconiosis of the Correspondence Committee on Industrial Hygiene, International Labour Office, attended the international conference on silicosis:

Australia—Dr. Charles Badham, Medical Officer of Industrial Hygiene, Department of Public Health, Sydney, New South Wales

Belgium—Dr. A. Langelez, Inspecteur General, Chef du Service medical pour la protection du travail, Ministere du Travail, Brussels

Canada—Dr. A. R. Riddell, Clinical Specialist, Industrial Hygiene Branch, Department of Health, Toronto

Denmark—Dr. Skuli Gudjonsson, Chief, Health Service, Factory Inspection Department, Copenhagen

France—Dr. A. Policard, Professor d'histologie, Faculte de Medecine, Lyon

Great Britain—Dr. E. J. King, British Postgraduate Medical School, University of London, Hammersmith Hospital, London; Dr. E. L. Middleton, Medical Inspector of Factories, London

Japan—Dr. Jisaku Tsukata, Mining Inspector, Bureau of Labor, Department of Welfare, Tokyo

Union of South Africa—Dr. L. G. Irvine, chairman, Miners' Phthisis Medical Bureau, Johannesburg; Dr. A. J. Orenstein, Chief Medical Officer, Rand Mines, Johannesburg

United States of America—Dr. Leroy U. Gardner, Director, the Saranac Laboratory for the Study of Tuberculosis, Saranac Lake, New York; Dr. R. R. Sayers, Senior Surgeon, Chief, Division of Industrial Hygiene, National Institute of Health, Public Health Service, Washington, D. C.

Observers from five countries also listened to the discussions during the meeting:

Australia—Dr. W. E. George, Medical Officer in Charge, Bureau of Medical Inspection, Broken Hill

Belgium—Dr. J. Van Beneden, Professeur a la Universite, Liege; Dr. Quinet, vice-president de la Commission des Medecins Specialistes de la Federation des Associations Charbonnieres, Brussels

France—Dr. G. Hausser, Directeur de l'Institut d'etude et de prevention des maladies professionnelles, Paris

Netherlands—Dr. A. H. Vossenaar, Chief Medical Officer, United Collieries, Heerlen, Limburg

United States of America—Dr. L. Greenburg, Executive Director, Division of Industrial Hygiene, New York State Department of Labor, New York

compensation to be paid, can be determined only by a complete examination of the individual, the committee declared. This includes occupational exposure and a knowledge of the working conditions. X-ray examination should be made, but it must be recognized that radiological findings do not necessarily bear a definite relation to the degree of incapacity. Other diseases in the individual may have an influence on the general conditions and must also be assessed. Preliminary and periodic examinations of the individual are of great assistance in determining the origin of the disability, but more than one examination, in fact, repeated examinations, perhaps with observation in a hospital, may be necessary in some cases to determine the disability and the relationship of the man's work to the disability. The committee was of the opinion that the degree of disability is incapable of being expressed in an exact percentage.

At the close of its meetings, the committee considered methods for distributing information to all member nations using the International Labour Office as a clearing house, and also considered the desirability of holding similar conferences at more frequent intervals.

American Water Works Association To Have Voice in ASA Policies

The American Water Works Association, which has been taking an active part in the work of the American Standards Association for some time, has just increased its membership in the ASA from an Associate Member to a Member-Body. Through this change, it will from now on have a voice in the approval of standards, initiation of standardization projects, and other matters of policy concerning the standards work of the ASA which come before the ASA Standards Council for decision.

The Association has shown its interest in the standards program in the past through membership on 11 of the committees which are working on development of standards under the procedure of the ASA. It has taken the administrative leadership, in cooperation with other organizations, for two of these committees, those on Specifications for Cast-Iron Pipe and Special Castings (A21), and on Fire-Hose Coupling Screw Thread (B26-1925).

Reeves Newsom, New York, is president of the American Water Works Association; William W. Brush is treasurer; and Harry E. Jordan, New York, is secretary. Mr. Jordan has been named to represent the Association on the ASA Standards Council.

Sayers Heads ASA Committee On Safe Limits of Toxic Dusts

DR. SAYERS, one of the vice-chairmen of the international committee on silicosis, which held its meeting last September as reported in his article on page 60, is chairman of the committee on Standard Allowable Concentrations of Toxic Dusts and Gases of the American Standards Association. This committee is working to determine how much of various gases, vapors, fumes, dusts, or mists may be permitted to remain in the atmosphere without harmful effect on the workers.

The committee will make recommendations to ASA committees which are working on methods of preventing occupational diseases, particularly the committees on the design and operation of exhaust systems, and on protection of heads, eyes, and respiratory organs of industrial workers. Its findings will be helpful in carrying out the recommendations of the international conference, which emphasized the necessity of preventing silicosis through suppression of silica dust.

All standards prepared by the ASA committee will first state the scope and purpose of the standard; second, identify the substance chemically, physically, and descriptively; third, state the maximum permissible range of concentrations of the toxic substance in the air of work places; fourth, state how and where atmospheric samples shall be collected; fifth, describe the method or methods to be employed in analyzing air samples; sixth, include an interpretation and general summary of information to help in applying the requirements.

The committee is now considering a draft standard on carbon monoxide.

Dr. R. R. Jones of the U. S. Public Health Service is acting as Technical Secretary for this committee.

The Sectional Committee on Standard Allowable Concentrations of Toxic Dusts and Gases is only one of the many committees working on standard safety codes under the procedure of the American Standards Association. They cover such widely various subjects as standard safety practices for the operation of machinery, methods of compiling accident statistics, industrial sanitation, safety glass, window cleaning, amusement parks, highway traffic signs, and ladders.

Dr. R. R. Sayers

Commercial Standards for Disinfectants, Deodorants, Germicides Now Available

Five Commercial Standards for disinfectants, deodorants, and germicides have been issued by the National Bureau of Standards and are now providing minimum specifications for quality in the manufacture of those products.

Each standard is published in a separate pamphlet, as follows:

Liquid Hypochlorite Disinfectant, Deodorant and Germicide, CS68-38

Pine Oil Disinfectant, CS69-38

Coal Tar Disinfectant (Emulsifying Type), CS70-38

Cresylic Disinfectants, CS71-38

Household Insecticide (Liquid Spray Type), CS72-38.

The purpose of these standards is to form a basis for voluntary guarantees between producers, distributors, and users that the efficacy of the materials is what should be expected of them.

These pamphlets contain the following information: composition; physical and chemical properties; identification; certification of quality; and methods of packing.

Copies may be obtained from the Government Printing Office, Washington, D. C., at five cents each.

How Standardization Works At General Electric

by

H. W. Samson

Standards Department,
General Electric Company, Schenectady

THE Standards Department of the General Electric Company, organized early last year, was set up to coordinate the company's activities in developing and applying both "external" and "internal" standards.

A considerable percentage of our standardization work is inter-industry and involves cooperation with such bodies as the American Institute of Electrical Engineers, the American Standards Association, the American Society of Mechanical Engineers, the American Society for Testing Materials, the Edison Electric Institute, the National Electrical Manufacturers' Association, and the National Fire Protection Association.

This is what we call "external" standardization. Before the organization of the Standards Department it was handled by one group under the direction of the vice-president in charge of sales.

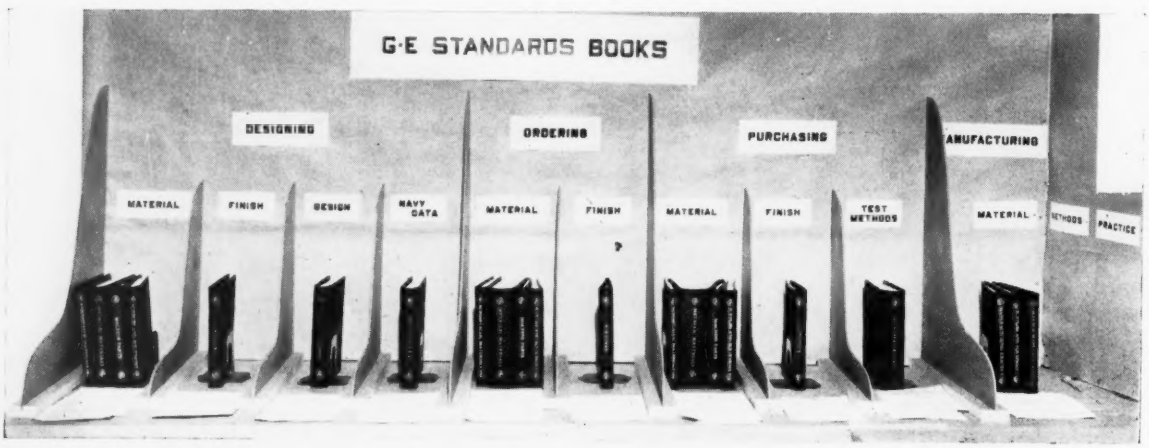
Company standards, or "internal" standards, were handled by another group under the direction of the vice-president in charge of engineering.

The new Standards Department works with the various international, national, and local associations and agencies in developing standards, codes, and ordinances which may affect the operations of the company. It also correlates the activities of the company representatives in developing standards, and keeps the various departments informed as to the developments which may affect them.

The Standards Department also promotes the development and adoption of company standards for the use of the commercial, engineering, and manufacturing organizations. It publishes company standards, and takes such steps as are necessary to insure the proper understanding and application of these standards. In this work the Standards Department cooperates fully with all inter-

Fig. 1

G-E Standards are correlated in standards books according to subject and use



ested departments to obtain the maximum benefit to the company. The Standards Department reports to the vice-president in charge of sales but is equally responsible to the engineering, manufacturing, and commercial organizations.

General Electric adopts American, industry, trade, and association standards where available and applicable. Other necessary internal company standards are developed and adopted by committee action. The engineering department has a number of groups working on standardization as subcommittees of the General Standardizing Committee. The manufacturing department has independent standardization committees engaged in similar work. The coordination of the internal standardization activities of the General Electric Company was a natural outgrowth of work done during the seven years since 1931.

Many Varieties in 1931

A comprehensive survey of our metallic material stock in 1931 showed a tremedous number of varieties in use by the different departments and works. We found varieties in qualities, sizes, finishes, edges, tempers, etc., in addition to a wide variety of designating systems. It was apparent that we had a large number of unnecessary varieties. A satisfactory solution presented a very complicated problem, however, because we had no accurate record of the number of forms of these materials in current use. We depended on an alert order man or the vendor to supply what we required for a particular job.

It was finally decided to attack the problem by setting up an entirely different specification system covering metallic materials. The intent was to supply designing engineers with a standard reference book of metals used by the company. This scheme was soon extended to include non-metallic materials, machine parts, and supplies and equipment. Soon after the new specification system was inaugurated, we found it desirable to supply similar information for our production and manufacturing organizations.

From this start, our present organization for the initiation and promotion of Company standards developed, centering in the new Standards Department toward which standardization work on a multiplicity of different subjects converges. The principal functions of the Standards Department in the development of internal or Company standards are to follow outside standardization activities, assemble best information available on any specific subject, initiate new standards where necessary, advise standardizing committees, coordinate work where more than one group or committee is involved, and edit and publish company standards that are adopted.

The General Electric Company was connected with the American Standards Association as early as 1922 and has taken a continuous and very active part in standardization work. No less than 74 members of its staff are at present active on various ASA committees as the representatives of a number of different technical societies and associations.

L. F. Adams, who heads the recently organized G-E Standards Department, is a member of the ASA Standards Council which passes upon all new undertakings and also has final decision on approval of standards and revisions. Mr. Adams is chairman of the general administrative committee in charge of the ASA safety code program. He is also a member of the Electrical Standards Committee which heads up ASA work in the electrical field, and member of the United States National Committee of the International Electrotechnical Commission which is responsible for the international phases of standardization work in the electrical field. He is chairman of two committees working on standards under the procedure of the American Standards Association, and a member of 11 others.

H. W. Samson, author of this article, is also active on a number of ASA committees serving as chairman of one, and secretary of another.

The coordination of internal standards has been extended to include design and manufacturing problems in addition to raw materials. We have committees on specific subjects consisting of specialists from each of the principal works interested in that subject. Where a specific standardizing committee is not established, the subject is referred to general committees for engineering and manufacturing approval. A company standard may be initiated by a design or manufacturing department, a particular committee, the Standards Department, or as a result of some action taken by an outside body. Before any company standard is formally adopted, it is submitted to the interested committee, or committees, for approval. In

the case of raw materials, drafts of the engineering-properties sheet, data-for-ordering, and purchase specifications are usually prepared by the committee on Purchase Specifications and Standardization of Raw Materials in cooperation with the Metallurgical, Insulation, or other interested committee or committees.

OUTLINE OF NUMBERING SYSTEM FOR FINISHES

F1-F19	Machined Finishes
F20-F29	Organic Finishes, Chromatic
F20	Blue (up-481.5 M_μDWL)
F21	Green-blue (481.5-495 M_μDWL)
F22	Green (495-515 M_μDWL)
F23	Yellow-green (515-571.5 M_μDWL)
F24	Yellow (571.5-578.5 M_μDWL)
F25	Red-yellow (578.5-620 M_μDWL)
F26	Red (620 and over M_μDWL)
F28	Blue-red (All negative DWL)
F30-F39	Organic Finishes, Achromatic (very low saturation)
F30	White (70-100% brilliance)
F31	Gray
F32	Black (0-10% brilliance)
F40-F49	Organic Finishes, Miscellaneous
F40	Metallic
F41	Metal-like
F45	Clear
F60-F69	Inorganic Finishes (Non-metallic)
F60	Vitreous enamels
F65	Inorganic salts
F70-F79	Metallic Finishes
F70	Electro-plate
F71	Immersion-plate
F72	Metal-spray
F73	Hot-dip coatings
F74	Cementation coatings (sherardizing, calorizing)
F80-F89	Impregnations

The following is typical of group expansion:—

F20 Blue

	Saturation	*Brilliance*	*Typical Colors*
F20A	High	High	
F20B	High	Medium	Cobalt blue
F20C	High	Low	Ultramarine
F20D	Medium	High	
F20E	Medium	Medium	Sky blue
F20F	Medium	Low	
F20G	Low	High	Persian blue
F20H	Low	Medium	
F20K	Low	Low	Navy blue

DWL indicates dominant wave-length in millimicrons (M_μ).

Saturation and brilliance rated: High 70-100%; Medium 30-70%; Low 0-30%.

Fig. 2
The G-E Numbering System is a Combined Letter-Number System

New purchase specifications for general purpose materials are submitted to the Purchasing Department and to vendors before publication. Special works' specifications are sometimes prepared by the individual Works Laboratories with little or no formality and assigned special works' numbers to distinguish them from the general purpose specifications. Other standards work is less concentrated than that on materials and the procedure varies somewhat depending upon the subject. In all cases, however, final approval is expected from recognized standardizing committees and the standards are issued as their recommendations.

Only on rare occasions have we found it necessary to arbitrate controversial questions because of differences of opinion in various committees. Effective standardization within a company requires adequate representation of and close cooperation between the different interests and we have this representation and cooperation under our present organization.

Except for the standards of outside bodies which, after approval, are distributed directly as authority for use, G-E standards are published as recommended practices in a series of G-E Standards Books. Five years work has resulted in the books, classified according to subject and use, shown in Figure 1. The Non-metallic Materials Book covers non-metallic materials ordinarily used in design and specified on drawings. The Machine Parts Book covers fabricated parts that may be manufactured or purchased outside. The Supplies and Equipment Book covers items commonly used for factory equipment or maintenance and ingredients used in the manufacture of alloys, compounds, etc.

The Test Method Book covers referee test methods written to supplement G-E purchase specifications. They are used in conjunction with our certificate of test system mentioned later. When available we use ASTM test methods. In many instances we have been obliged to develop our own test methods, and sometimes the test equipment, because there was nothing available in the trade.

Use Work of ASA Committee

The Finish Book covers machine and applied finishes. Further work on machine finishes will depend largely on the findings of the ASA Sectional Committee on Classification and Designation of Surface Qualities (B46). The Mechanical Design Book covers approved mechanical design practices and is one of our most active subjects at the present time. The recommendations of a number of engineering and manufacturing committees are recorded in this book.

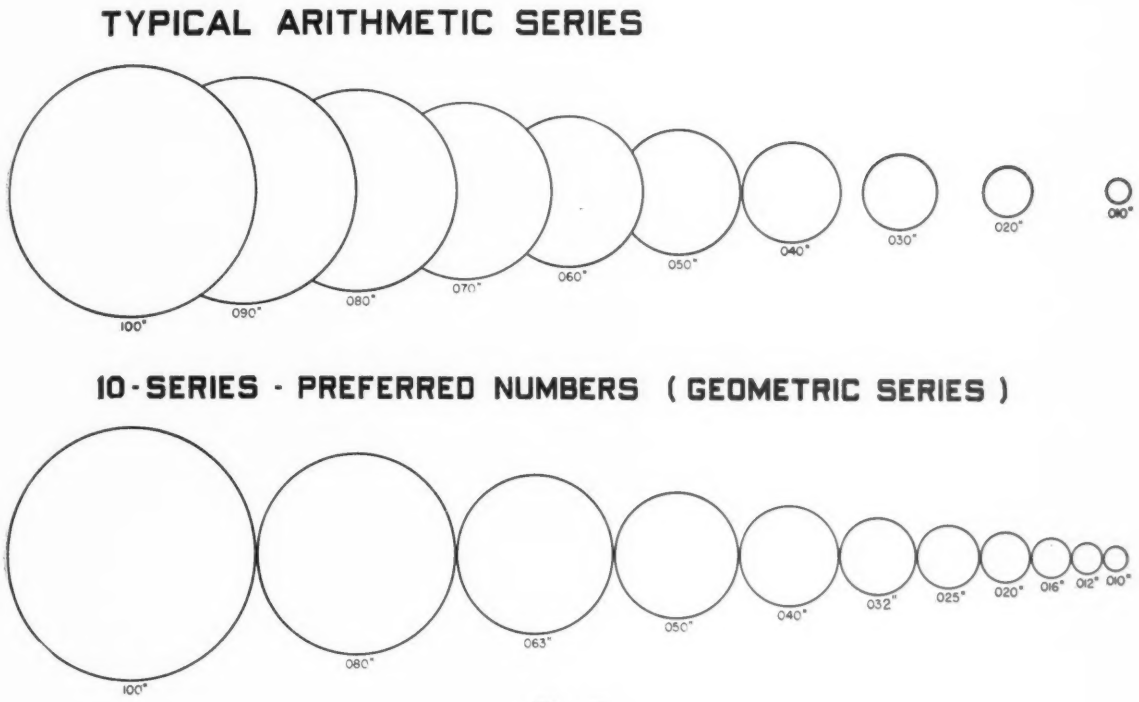


Fig. 3

The General Electric Company applies the preferred numbers system and uses this chart to show its advantages

The properties sheets and charts for the designing engineers, the data-for-ordering sheets for production and order clerks, the specifications and test methods for the Purchasing Department, and where necessary, the data-for-manufacturing sheets or manufacturing drawings are used simultaneously for any specific material.

The properties sheets or charts supply our designers with all the data we have on a specific material or family of materials. Insofar as possible we include data on machinability, weldability, corrosion-resistance, tolerances, etc. in addition to chemical composition and physical characteristics.

The data-for-ordering sheet tells the production or order clerk what material the designation covers and how orders should be worded and placed. Our purchase specifications are not materially different from the specifications of other manufacturing companies. In general, we require a certificate of test from the vendor and this method of acceptance has proven very satisfactory and is being extended to cover a large percentage of purchased raw material.

Our data-for-manufacturing sheet is merely an instruction to the factory or contributing department as to what to do in order to meet a particular specification. This assists our contributing departments such as forge, heat-treating, screw machine, and cold-upsetting departments to readily interpret purchase specification requirements in terms of materials and processes familiar to them.

The G-E numbering system for the non-metallic and metallic materials, machine parts, supplies and equipment, and finishes is a letter-number designating system as indicated in the outline of finish numbers shown on page 66 (Fig. 2). Two navy blue finishes would be designated F20K1 and F20K2. In metallic material designations additional letters and numbers may be added to cover temper, heat treatment, edge, finish, etc., in order to avoid lengthy descriptions on drawings and material lists. This type of numbering system or code is used because it can be expanded indefinitely without conflicting with previously used designating systems or confusion with existing engineering and manufacturing designations for other purposes. These material designations are used on the properties sheets, data-for-ordering, and specifications.

Successive issues of specifications are identified by the addition of the dash suffix S1, S2, etc. The principal objection to a letter-number system is the difficulty in transmitting such designations over

the telephone. This disadvantage is more than offset by the advantage of indefinite expansion without separating similar materials by dissimilar numbers. By merely looking at a material number we know immediately the general family to which it belongs.

Since we are using preferred numbers so extensively in a great many of our standardization activities, we have tried to sell their use to the manufacturing men as well as the engineers. The graphical representation shown on page 67 (Fig. 3) illustrates the principle better than anything we have tried heretofore. We have been quite successful in selling preferred numbers where other schemes have failed. Preferred numbers appeal to the engineering mind because of their logical make-up as contrasted with a series of numbers based on personal choice. Obviously, if everyone uses preferred numbers in standardizing material sizes, etc. economies will accrue, both to the manufacturer and user because of the greater demand for the same (as well as fewer) sizes that will be manufactured, stocked, and ordered.

Economies in Preferred Numbers

Immediate economies in fewer sizes stocked, reduced inventories, greater interchangeability of stock, and larger quantities per purchase order make the use of the preferred numbers by the General Electric Company attractive even in advance of general acceptance by industry as a whole. General acceptance will undoubtedly result in further advantages and economies, such as increased availability of material in common sizes, elimination of dissimilar gage sizes, and hence greater interchangeability of materials heretofore dimensioned and priced in accordance with these gages.

A new system of cost and stock sheets is being established to carry cost information and to indicate preferred and stock sizes. This work is done in cooperation with the manufacturing department which is actively following the project as a part of its cost-reduction program. We believe this book will help reduce the number of material sizes called for on drawings, minimize standard sizes and stock, and ultimately reduce extras paid for small quantities of material. Recent surveys have shown us that a very large percentage of our quantity extras is due to variety of sizes purchased and not to variety of qualities, etc. as might be assumed.

We make little or no attempt to enforce the use of company standards. Our past experience has indicated that logical recommendations are voluntarily accepted and frequently welcomed by the responsible designing engineer. There are many instances involving materials where compliance with generally used standards is necessary to avoid extra costs. These cases provide tangible incentives for the adoption and use of company standards. On the other hand all G-E standards are of a temporary nature and are constantly subject to revision or cancellation in the interest of engineering and manufacturing progress or economic considerations.

Company standards and American Standards are very often dependent upon each other. An attempt to develop a company standard frequently indicates the desirability of an American Standard to avoid establishing a company standard on a subject of general interest. At the same time, an investigation of company requirements provides the necessary knowledge to assist a particular committee in the drafting of a satisfactory American Standard. Perhaps an illustration of this may be seen in the recent ASA activity on graphical symbols for use on drawings. While the investigation of G-E requirements may or may not have assisted in this work, it did permit us to gage the suitability of proposed standards before we attempted to apply them and to avoid establishing independent company standards that sooner or later would have had to be changed.

Company activities of this nature are desirable, if not necessary, to assist in the development of suitable company standards and in the avoidance of unnecessary changes, as well as to insure the rational application of existing American Standards. It appears questionable if sufficient information on individual company requirements is available to demonstrate the practicability of some of the present standards and practices now commonly accepted or specified. The growing interest in company standardization gives promise of providing the answer to this and similar perplexing problems.

Ainsworth to Help with Rules For Employment of Children

Cyril Ainsworth, assistant secretary of the American Standards Association and in charge of the Association's safety code program, was named by Secretary of Labor Frances Perkins recently to serve on the Advisory Committee on Occupations Hazardous to Minors. The committee will assist the Children's Bureau in setting up rules for the employment of children under the Fair Labor Standards Act.

ASA Company Member Forum Holds Second Meeting

The relationship between the standardization department of a company and such other departments as research, development, engineering, purchasing, manufacturing, inspection, and sales provided the main topic for discussion at the February 8th meeting of the ASA Company Member Forum. Thirteen representatives of ten companies were present and took part in the discussion.

W. S. MacLeod of the Standard Oil Development Company, C. T. Van Dusen of the Detroit Edison Company, and H. W. Robb of the General Electric Company, informally discussed the subject of the meeting as it related to their own companies. H. W. Samson of the General Electric Company summarized this discussion, and the meeting was then thrown open for questions and general discussion.

The subject for the next meeting, it was decided, will be preferred numbers and screw threads, and the officers of the Sectional Committees on Preferred Numbers and on Screw Threads will be invited to present the opening discussions.

The Company Member Forum of the American Standards Association provides a medium for the informal exchange of ideas on the organization and work of a standards department in a company, its purpose being to help company members in the solution of their own standardization problems. The Forum is conducted on an entirely informal basis and no detailed record of the proceedings is kept. In the opinion of those taking part, this policy results in the greatest benefit to all concerned. It makes it necessary, however, for company standards men to attend and participate in the meetings if they are to have the benefit of all the discussions which take place in the Forum meetings.

Any company member of the American Standards Association interested in the plans of the Forum and willing to take an active part in the discussions is invited to write the ASA office for further information.

F. M. Farmer Nominated As AIEE President

F. Malcolm Farmer, vice-president and chief engineer of the Electrical Testing Laboratories, New York, and vice-chairman of the Standards Council of the American Standards Association, has been nominated as president of the American Institute of Electrical Engineers.

Mr. Farmer has been active in standardization work for many years. He is a member of the Electrical Standards Committee and the United States National Committee of the International Electrotechnical Commission of the American Standards Association. He is now a vice-president of the AIEE representing the New York City District.

Mr. Farmer is a past president of the American Society for Testing Materials and of the American Welding Society; a Fellow of the American Association for the Advancement of Science; and a member of the Institution of Electrical Engineers (Great Britain) and of the American Society of Mechanical Engineers.

ASA Schedules 1939 Meetings

Meetings of the Board of Directors and the Standards Council of the American Standards Association have been scheduled for the year. The Board of Directors will hold its meetings on Wednesdays, March 29, June 14, and September 27. The Standards Council will meet Thursdays, April 27, June 15, and September 28.

The annual meeting of the American Standards Association, which includes a joint meeting of both the Board of Directors and the Standards Council, will be held on Wednesday, December 13.

ASTM Pipe Standards In One Volume

The standard and tentative specifications for steel piping and piping materials for high-temperature and high-pressure services issued by the American Society for Testing Materials are now made available by the ASTM in one volume. The 18 specifications included in the publication cover carbon-steel and alloy-steel pipe and tubing, castings, forgings, and bolting.

Several of the standards have been approved by the American Standards Association as American Standard.

Copies of the ASTM Specifications for Pipe and Piping Materials for High-Temperature and High-Pressure Services can be ordered from the American Society for Testing Materials, 260 South Broad Street, Philadelphia, at $1.25 each.

Two new members elected, four others re-elected to complete Board Membership for 1939

ASA Board Elects Pratt and Case

TWO members of the Board of Directors of the American Standards Association were elected during the past month and four others were re-elected, completing the membership of the Board for the coming year.

Haraden Pratt, vice-president and chief engineer of the Mackay Radio and Telegraph Company, was nominated by the Institute of Radio Engineers, and will serve as a member of the Board for three years. George S. Case, chairman of the Board of the Lamson & Sessions Company, Cleveland, was nominated by the American Society of Mechanical Engineers to complete the unexpired term of Philip E. Bliss who resigned recently.

Mr. Pratt, who has been active in standardization work connected with radio for some years, has had sole charge of all plant construction and maintenance as well as equipment development for his company since 1928. The organization has now built up from a small beginning to a service which extends to several European countries, nearly every country in South America, Hawaii, the Philippines, Shanghai, and Tokyo, as well as 13 cities throughout the United States.

Mr. Pratt was chairman of the Standards Committee of the Institute of Radio Engineers in 1935, and for several years has been chairman of a technical committee of the Sectional Committee on Radio and of a subcommitee on Radio of the Sectional Committee on Electrical Definitions, both working under the procedure of the American Standards Association.

Long Career in Radio

Mr. Pratt started his career in radio as early as 1906 when he was president of the Bay Counties Wireless Telegraph Association in San Francisco, one of the very few radio clubs of the early days.

He served as U.S. Government Technical Advisor at the International Radio Telegraph Conference at Washington in 1927, and as Technical Advisor to the U.S. Delegation to the conference of the International Technical Consulting Committee on Radio Communication at Copenhagen, 1931. He also attended as a company representative the meeting of the International Technical Consulting Committee on Radio Communication at Bucharest, 1937; and the International Communication Conferences on Radio and Telegraph at Cairo, 1938.

Active in Standardization

Mr. Case has been active in standardization work for 20 years as a member of the Society of Automotive Engineers and the American Society of Mechanical Engineers. For many years he was a member of the National Screw Thread Commission.

In his career with the Lamson & Sessions Company, manufacturers of bolts, nuts, screws, and other such products, he has served as plant engineer, plant manager, treasurer, vice-president, president, and finally as chairman of the Board. He has been particularly active in standardization work through the Standards Committee of the American Institute of Bolt, Nut & Rivet Manufacturers, having been chairman of that committee, and also president of the Institute.

Mr. Case has already had close contact with the American Standards Association, as an alternate on the Standards Council since 1934, representing the American Institute of Bolt, Nut and Rivet Manufacturers, and as a member of the Sectional Committees on Standardization and Unification of Screw Threads, and on Bolt, Nut and Rivet Proportions.

The four members of the Board who have been

Continental by R.M.G., Inc.

George S. Case

Photo by Bachrach

Haraden Pratt

re-elected to serve until 1941 are:

Lyman J. Briggs, Director, National Bureau of Standards, nominated by the U. S. Department of Commerce

C. L. Collens, president, Reliance Electric and Engineering Company, nominated by the National Electrical Manufacturers Association

Howard Coonley, chairman of the board, Walworth Company, president of the National Association of Manufacturers, nominated by the Manufacturers Standardization Society of the Valve and Fittings Industry

R. E. Zimmerman, vice-president, U. S. Steel Corporation, vice-president of the American Standards Association, nominated by the American Iron and Steel Institute

All of these members have had a long and close contact with the American Standards Association. Dr. Briggs was a Standards Council alternate until he became a member of the ASA Board in 1932. Mr. Collens was a member of the Board from 1928 through 1932 and was elected again in 1937. He was a member of the Electrical Advisory Committee until that committee was reorganized as the Electrical Standards Committee in 1931, and was a member of the ESC and of the United States National Committee of the International Electrotechnical Commission until 1933.

Mr. Coonley has been a member of the Board since 1928, serving as president of the American Standards Association through some of the Association's most difficult years—1933 through 1935.

Mr. Zimmerman, who is now vice-president of the American Standards Association, was elected to membership on the Board in 1937 and was elected vice-president of the Association at the annual meeting in December, 1938.

The entire membership of the Board of Directors, which in addition to those named here includes members nominated by the Automobile Manufacturers Association, the American Institute of Electrical Engineers, the National Conservation Bureau, the Association of American Railroads, the Electric Light and Power Group, Cast Iron Pipe Research Association, American Petroleum Institute, Fire Protection Group, and the American Society for Testing Materials, is shown on the title page of this magazine.

Index to Literature on Spectrochemical Analysis

An index to the literature on spectrochemical analysis has been prepared by W. F. Meggers, chief of the Spectroscopy Section, and B. F. Scribner of the National Bureau of Standards, and published by the American Society for Testing Materials. Copies are available from the ASTM, 260 South Broad Street, Philadelphia, at $1.00 each.

Mining Correlating Committee Elects Officers, Reviews Work

DANIEL HARRINGTON, chief of the Health & Safety Branch of the U. S. Bureau of Mines, was re-elected chairman of the Mining Standardization Correlating Committee at its meeting February 16. This committee is in charge of the ASA mining standards program.

Lucien Eaton, American Mining Congress, and Rush N. Hosler, representing the Coal Mining Institute of America, were re-elected to serve as vice-chairmen.

Other members of the Executive Committee of the MSCC are: E. A. Holbrook, representing the American Association for Labor Legislation; N. P. Rhinehart, representing the Mine Inspectors Institute of America; and G. B. Southward, of the American Mining Congress.

A revision of the standard for Rock Dusting Coal Mines is being prepared by the American Institute of Mining and Metallurgical Engineers, and will be considered by the ASA sectional committee when it is completed, it was reported at the meeting. The Sectional Committee on Rock Dusting Coal Mines is now being reorganized.

A standard defining varieties of bituminous and sub-bituminous coals, which will round out the work of the sectional committee on Classification of Coals, is being completed and will be submitted to the American Standards Association for approval in the fall. This standard has already been approved as a tentative standard by the American Society for Testing Materials, which has the administrative leadership for the work of the committee. Three other standards on coal classification have been approved by the American Standards Association:

Specifications for Classification of Coals by Rank (M20.1-1937; ASTM D 388-37)
Specifications for Classification of Coals by Grade (M20.2-1937; ASTM D 389-37)
Method for Designating the Size of Coal from Its Screen Analysis (M20.3-1938; ASTM D 431-38)

A study of the installation and operation of underground transmission lines, which may be useful in connection with work of an ASA committee on Specifications for Trolley, Storage Battery and Combination Type Locomotives for Coal Mines, has been started by the Power Committee of the American Mining Congress Coal Division, the Mining Standardization Correlating Committee was told. The study will probably take several months to complete.

Daniel Harrington

Study Quarry Safety Code

The need for a safety code to cover quarry operations has been emphasized during the past year in discussions by regulatory authorities and the Safety Code Correlating Committee. This question was referred to the Mining Standardization Correlating Committee by the Safety Code Correlating Committee. The MSCC decided that in its opinion such a code, to cover not only quarry operations but also operations in open pits and strip mines, should be developed. A canvass of all groups concerned with quarrying and other open mining operations is now under way to learn whether there would be sufficient support for undertaking such a project.

The MSCC also decided that its policy should be to review each mining standard at least every five years to determine whether it should be revised, and that when a revision is undertaken it should be completed within a year.

Revision Tightens Safety Requirements To Prevent Fire in Ventilating Systems

REVISED regulations to prevent fire hazard in air conditioning and ventilating systems, prepared by the National Fire Protection Association, were approved recently by the American Standards Association.

The publication includes both regulations for the installation of air conditioning, warm air heating or cooling, and ventilating systems for residence and non-residence use.

The changes in the present edition call special attention to the fact that the standard does not recommend the use of combustible coverings or combustible exterior insulations to ducts. They provide for the number of cleanout openings to facilitate the cleaning of return ducts, and for the use of fixtures of the vaportight type for lamps within the conditioning system. The revisions also make changes in the requirements for fire dampers, and for location of air inlet and outlet openings.

For residential air conditioning systems the revision includes changes in requirements for the temperature at which the automatic device may be set, and for limiting the average temperature of the air at the beginning of the main duct.

The American Standard Regulations for the Installation of Air Conditioning, Warm Air Heating or Cooling, and Ventilating Systems, approved by the ASA as American Standard Z33.1-1938, have also been adopted by the National Board of Fire Underwriters. Copies of the pamphlet containing this standard as well as the American Standard Regulations for the Installation of Blower and Exhaust Systems for Dust, Stock, and Vapor Removal, published by the National Fire Protection Association, are available at 15 cents each.

Modular Service Association Joins ASA Associate Members

The Modular Service Association, organized to carry on the research and development program originated by the Bemis Industries for correlating the dimensions of buildings, building materials, and equipment, has just become an Associate Member of the American Standards Association.

The Association is taking an active part in the new project on dimensions of building materials initiated recently by the American Standards Association.

As an Associate Member the Modular Service Association will be in close touch with the activities of the ASA, and will receive some of the ASA service.

Officers of the Association are: Alan C. Bemis, chairman of the Executive Board; and Myron W. Adams, executive secretary.

New Edition of Standard On Terminal Markings

Copies of the revised American Standard on Rotation, Connections and Terminal Markings for Electric Power Apparatus (C6-1938), approved by the American Standards Association in September, are now available. The new edition includes additional material on terminal markings for a-c and d-c motors and generators, constant potential transformers, and a new section on instrument transformers and wiring devices. The standard now covers terminal markings and diagrams for electric power apparatus, rotating apparatus, constant potential transformers, step-type feeder voltage regulators, industrial control, instrument transformers, current-limiting reactors, and attachment plugs.

Copies of the standard, published by the National Electrical Manufacturers Association, which has the administrative leadership for the work of the ASA committee on terminal markings, are $1.00 each. ASA members are entitled to 20 per cent discount on approved American Standards ordered through the ASA office.

Reaffirm Simplified Practice Recommendations

These Simplified Practice Recommendations have been reaffirmed without change by the Standing Committees of the industries concerned, according to recent announcements from the Division of Simplified Practice of the National Bureau of Standards:

Dental Base and Veneering Rubber R138-32
Metal Lath R3-36

Copies are available from the Superintendent of Documents, Government Printing Office, Washington, D. C., at five cents each.

Where to get Standards

The library of standards and specifications maintained by the American Standards Association for its company members is the only one of its kind in the United States

DO you want to find out something about lubricating oils, or stresses for steel girders, or pipe threads? Hundreds of engineers in companies all over the United States have asked the American Standards Association for such information. Out of the efforts to answer these questions for its members, the Association has built up a library of more than 20,000 standards, specifications, and related material. This includes standards from more than 20 countries having national standardizing bodies, reports developed by the International Standards Association, and standards established by several hundred technical societies, trade associations, and Federal government departments in this country. The Library also makes a point of keeping on hand up-to-date lists of trade and technical publications which may be of interest in connection with standardization work.

This collection of standards and specifications is the only one of its kind in the United States. In fact the ASA Library is the only place where certain types of technical information can be found. If you go to the New York Public Library for material on standards, they will send you to the American Standards Association. The Engineering Societies Library will probably do the same thing.

The Association comes as near as it can to bringing its library into the factories and offices of the company members. All of its material is readily available. The Library does a "land office" business in loans to all parts of the United States. Or if you are in too much of a hurry to fetch the material yourself or to wait for the mails, the librarian will find what you want and read it to you over the phone. Every effort of the Library is centered upon getting the material into the hands of the men who want to use it. Sometimes, when specifications for filling a foreign order happen to be involved, this quick service can be an important matter.

Information Please

For the "A" Company, the Library was able to supply Australian standards for several types of asphalt, from its file of three copies each of several hundred Australian national standards.

Another Company had a technical question about wire gages which the ASA Library was able to answer by return mail.

An engineer of the "B" Company recently borrowed a collection of pamphlets on the subject of preferred numbers which helped him to solve several application problems in his company.

A petroleum company borrowed several indexes of foreign national standards from the ASA Library and from these was able to pick out the specific standards needed for a particular research job. These standards were in turn obtained from the ASA Library without the delay and difficulty of getting them from abroad.

For an insurance company the ASA Library was able to collect from many sources standards for fruit, vegetables, and dairy products. It is interesting to note that many important standards in this field are available from abroad.

More than a Library

In addition to the routine duties of cataloging material, helping visitors, and making out loan forms, the ASA Library provides some rather unusual services for ASA members. For instance, if you are a production manager in a firm making cast iron and steel pipes, you can ask the ASA librarian to keep you in touch with developments in the preparation of a new edition of the American Standard for Pipe Thread. As soon as a new draft is released by the committee in charge of the standard, it will be forwarded to you with a loan letter, thus keeping your company in constant touch with the work.

The Library provides the same type of service

for trade associations, automatically notifying them of the publication of new editions of standards in which their members have an interest.

Members can also ask the Library to let them know when special indexes are published, for example, the British Index, or the list of Simplified Practice Recommendations. Or they may ask the Library to keep track of some standard that is being published by another organization and to send it to them as soon as it is available.

The Library is also of assistance when a company member is setting up a new standards department or reorganizing and improving an existing standards department. It will look up material on how the standards departments in other companies are organized. It will obtain for the company the standards that it wishes to keep on file, and will give the personnel of new or reorganized departments many other practical helps.

The Library is also called upon sometimes to furnish technical information for use in legal cases. Two recent questions in the legal field involved the American Standard Safety Code for Elevators, and a technical society's standard for oil storage tanks.

Informs on Foreign Standards

Because of the very important contacts which the American Standards Association has in this country and abroad (in many cases it is the only organization that has such contacts) the Association has sometimes been requested by its members to conduct inquiries and do research on standardization questions in particular fields. For instance, extensive inquiries about work abroad on plastics, electrical safety, consumer goods, photography, steel, and radio have recently been carried on. All of this material is made available to members through the ASA Library Service.

Some time ago the Library received a request from a foreign national standardizing body interested in standards for house trailers. It was able to dig up a proposed Swedish standard on the subject in addition to considerable American material. This information from the ASA, while of direct value to the foreign organization, may also prove to be of considerable value to American manufacturers of motor vehicles and equipment. Frequently foreign standardizing bodies send drafts of proposed standards to the ASA with requests for comment and criticism. These are forwarded by the Library to Company Members in the field of the proposed standard, thus giving them an opportunity to influence the development of a standard which may later on affect the sale of their product abroad.

Services to Members

The Information Service and Reference Library is but one of the services which the American Standards Association provides for its 2,000 company members thoughout the United States.

The Association also publishes this magazine, *Industrial Standardization*, which every month brings to the engineers and executives of member companies news of standardization activities both in this country and abroad, and frequent articles on the practical application of standards in industry.

The Association supplies members with free copies of newly approved standards in which they are interested and also calls the attention of members to new standards as published. For the convenience of industry the Association keeps on hand many foreign standards and standards of trade associations and technical societies, as well as American standards. All of these are available to company members at a 20 per cent discount from the regular price.

The ASA Company Member Forum provides an opportunity for company members to informally exchange ideas to help in solving their standardization problems.

On the occasions when the Association conducts surveys into the use of standards and safety codes throughout industry, the results are tabulated and sent out by the Library. A year ago such a survey was completed on the use of the American Standard for Safety Glass by state regulatory bodies. The results were of considerable interest to automobile companies and manufacturers.

The Library is called upon to answer many unusual questions. One firm wants to know the melting point of cold cream. Another is looking for a standard safety code covering sand blasting operations. Another wants to know whether Class A insulation in a British Electrical Standard means the same type of insulation as Class A in a National Electrical Manufacturers Association standard.

Try a few of these questions on your own engineers. Sometimes it takes the ASA Library a week or more to track down an answer.

Keep YOUR Company

In step with NATIONAL STANDARDS

Manufacturing concerns in every industrial field are taking part in the national standards movement through the American Standards Association, the nation's clearing-house for developing and revising standards.

Standards—

- **Make possible high quality production at low cost.**
- **Assure uniform and reliable performance.**
- **Facilitate quality control in manufacture.**
- **Create a basis of customer-producer understanding.**

American Standards Association
29 West 39th Street, New York, N. Y. Date _____

Gentlemen:

Send me complete information regarding MEMBERSHIP for my company in the American Standards Association. Please enclose, without obligation, the items checked below:

- ☐ American Standards Year Book
- ☐ Sheet listing services to Company Members
- ☐ Further information on _____

Company _____

Street _____

City & State _____

Is Your Company A Member?